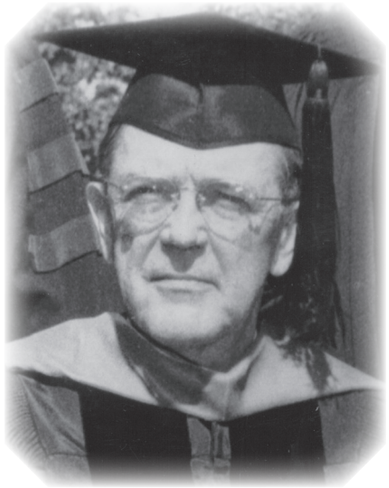

THE KELLY LECTURES

The Arthur Kelly Lectures were established by a grant from alumnus Arthur Kelly (BSChE '24). Kelly was a retired Excecutive Vice-President and Director of B.F. Goodrich Co. He received an honorary doctorate from Purdue in 1961. The Kelly Lectures are presented annually by outstanding engineers and scientists from the broad areas of chemical engineering. The recipients are selected by the faculty in recognition of their contributions to research and education. Past Kelly Lecturers include legendary figures in chemical engineering and two Nobel laureates.

PURDUE UNIVERSITY

Forney Hall of Chemical Engineering
480 Stadium Mall Drive
West Lafayette, IN 47907-2100

PURDUE CHEMICAL ENGINEERING

2016 KELLY LECTURES

SCHOOL OF CHEMICAL ENGINEERING

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1974 John M. Prausnitz
1975 Michel Boudart
1976 Arthur E. Humphery
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1978 James J. Carberry
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1981 Neal R. Amundson
1982 William R. Schowalter
1983 Thomas J. Hanratty
1984 Wolfgang M.H. Sachtler
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1987 Morton M. Denn
1988 Edward L. Cussler
1989 E.N. Lightfoot
1990 H. Ted Davis
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1996 John H. Seinfeld
1997 Lanny D. Schmidt
1998 Matthew Tirrell
1999 George Stephanopoulos
2000 Robert A. Brown
2001 Gerhard Ertl
2002 Mark E. Davis
2003 Gregory Stephanopoulos
2004 William B. Russel
2005 Special symposium
celebrating 40 years
Frank S. Bates
Alexis T. Bell
Ignacio E. Grossmann
Michael L. Shuler
James Wei
2006 Frances H. Arnold
2007 Manfred Morari
2008 Pablo Debenedetti
2009 Carol K. Hall
2010 Rakesh K. Jain
2011 Stanley I. Sandler
2012 James A. Dumesic
2013 Michael F. Doherty
2014 Enrique Iglesia
2015 Nicholas A. Peppas

KRISTI S. ANSETH

Distinguished Professor, Tisone Professor,
Associate Professor of Surgery, and
Howard Hughes Medical Institute Investigator

Chemical & Biological Engineering
University of Colorado - Boulder

http://www.colorado.edu/chbe/kristi-s-anseth

Kristi S. Anseth earned her B.S. degree from Purdue University in 1992 and her Ph.D. degree from the University of Colorado in 1994. After post-doctoral research at MIT, she joined the Department of Chemical and Biological Engineering at the University of Colorado at Boulder as an Assistant Professor in 1996. Dr. Anseth is presently a Howard Hughes Medical Institute Investigator and Distinguished Professor of Chemical and Biological Engineering. Her research interests lie at the interface between biology and engineering where she designs new biomaterials for applications in drug delivery and regenerative medicine. Dr. Anseth is an elected member of the National Academy of Engineering (2009), the Institute of Medicine (2009), and the National Academy of Sciences (2013). She is a proud Purdue alumna, was honored to receive a Distinguished Engineering Alumni Award (2012), and presently serves on the College of Engineering's Advisory Council.

Chemical Engineering at the Interface of Disciplines

Tuesday, April 19, 2016
3:00 PM, FRNY G140

When I began my career as an Assistant Professor, I wondered how to distinguish myself in my career. The boundaries between science and engineering, biology and material science, basic and translational research are often blurry, and how does one transition from the ordinary to something that is more extraordinary. One path is to look at the interfaces of fields and training, and this happens to be a path that I pursued. This talk will touch on topics such as when to take risks, how to build a network of support, and how to ensure the future success of the chemical engineering field by engaging in research that is valued across disciplines.

Cellular Control in a Couple of Clicks

Wednesday, April 20, 2016
11:30 AM, FRNY G140

Methods for culturing mammalian cells in a biologically relevant context are increasingly needed to study cell and tissue physiology, expand and differentiate progenitor cells, and to grow replacement tissues for regenerative medicine. Two-dimensional culture has been the paradigm for in vitro cell culture; however, evidence and intuition suggest that cells behave differently when they are isolated from the complex architecture of their native tissues and constrained to petri dishes or material surfaces with unnaturally high stiffness, polarity, and surface to volume ratio. As a result, biologists are often faced with the need for a more physiologically relevant 3D culture environment, and many researchers are realizing the advantages of hydrogels as a means of creating custom 3D microenvironments with highly controlled chemical, biological and physical cues. Further, the native extracellular matrix (ECM) is far from static, so ECM mimics must also be dynamic to direct complex cellular behavior. In general, there is an unmet need for materials that allow user-defined control over the spatio-temporal presentation of important signals, such as integrin-binding ligands, growth factor release, and biomechanical signals. Developing such hydrogel mimics of the ECM for 3D cell culture is an archetypal engineering problem, requiring control of numerous properties on multiple time and length scales important for cellular functions. New materials systems have the potential to significantly improve our understanding of how cells receive information from their microenvironment and the role that these dynamic processes may play in controlling the stem cell niche to cancer metastasis. This talk will illustrate our recent efforts to advance hydrogel chemistries for 3D cell culture and dynamically control biochemical and biophysical properties through orthogonal, photochemical click reaction mechanisms.